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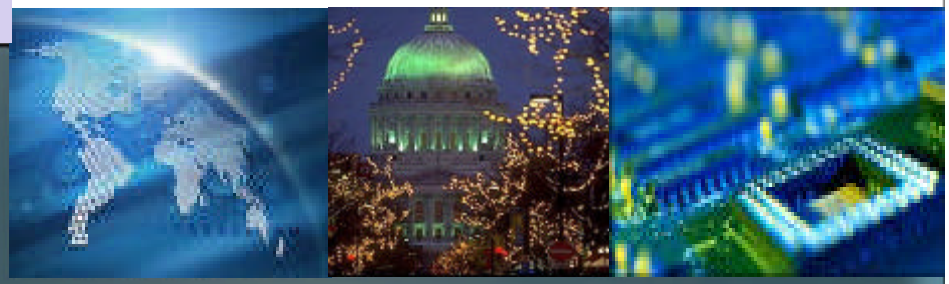

The Brave New World of Enterprise Integration

Wisconsin Digital Government Summit

November 19, 2003

Agenda

- Introductions
- Enterprise Architecture in the Federal Government
- HIPAA and State Government Perspective
- Local Government Perspective
- Q & A

Introductions

- Shirley Eckes
  - Wisconsin State Executive, American Management Systems
- Steve Wilburn
  - General Manager of Digital Government Services, American Management Systems
- Tony Rodriguez
  - ALR Healthcare, Department of Health and Family Services, State of Wisconsin
- Michael L. Enstrom
  - Project Leader/Enterprise Application Integration, Ozaukee County

Enterprise Architecture in the Federal Government

Steve Wilburn

American Management Systems, Inc.

What is Enterprise Architecture?

"Enterprise Architecture is a strategic information asset base, which defines the mission, the information necessary to perform the mission, the technologies necessary to perform the mission, and the transitional processes for implementing new technologies in response to the changing mission needs."

- **Describing the baseline architecture**
- **Defining the target architecture**
- **Developing a sequencing plan**

Source: CIO Council: A Practical Guide to Federal Enterprise Architecture (February, 2001).

Why Do We Care?

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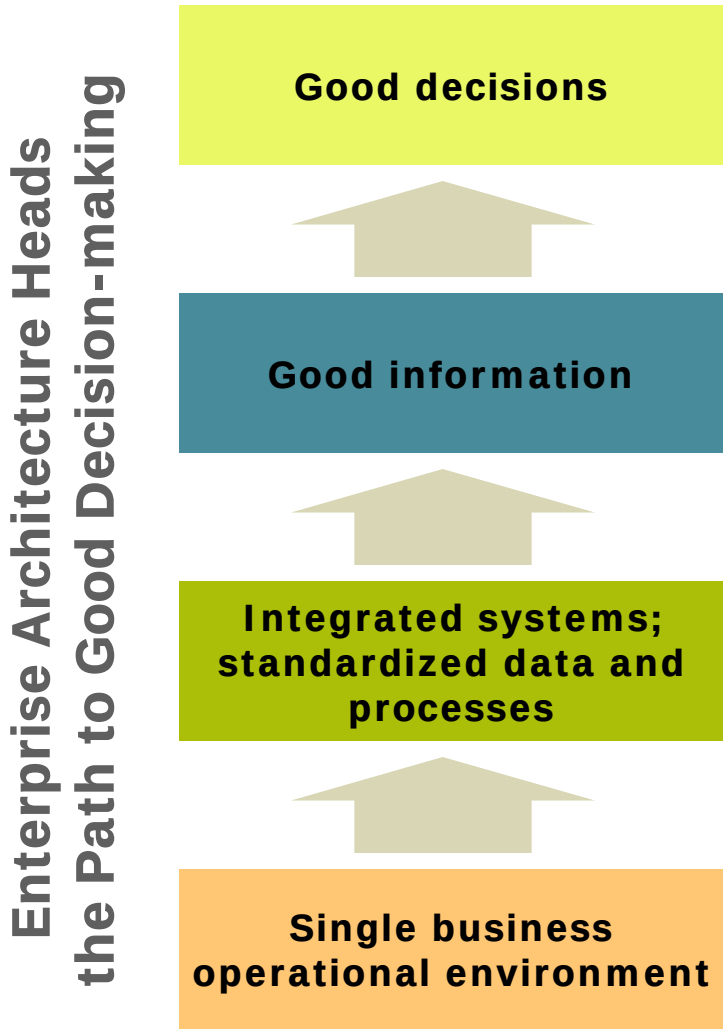

- **Fact:** No one can (or should) make strategic decisions without good information.
- **Fact:** Information exists primarily at low organizational levels, with each organization using different systems and methods to quantify and track the information. Accessing and compiling this information is difficult, time-consuming, unreliable and expensive.
- **Fact:** Many Public Sector organizations are plagued by time-worn, inefficient and nonintegrated business processes and supporting information technology assets that impede integration and standardization.
- **Fact:** Enterprise Architecture provides a single business operational environment to support integration and standardization.

And…Government Makes Us Care

- Information Technology Management Reform (Clinger-Cohen) Act, 1996
- Government Performance & Results Act (GPRA), 1993
- These + other legislation emphasize the need to pursue interoperable/integrated/cost-effective business practices
- Clinger-Cohen & GPRA codify the goals being pursued by U.S. departments, especially with regards to IT/architecture
- Performance of existing & planned info systems must be reported annually and may be subject to GAO audit
- Examples of well-established EA in U.S. include DOE, Department of Commerce, Department of Treasury, and now DoD.

Enterprise Architecture's Role in IT Governance

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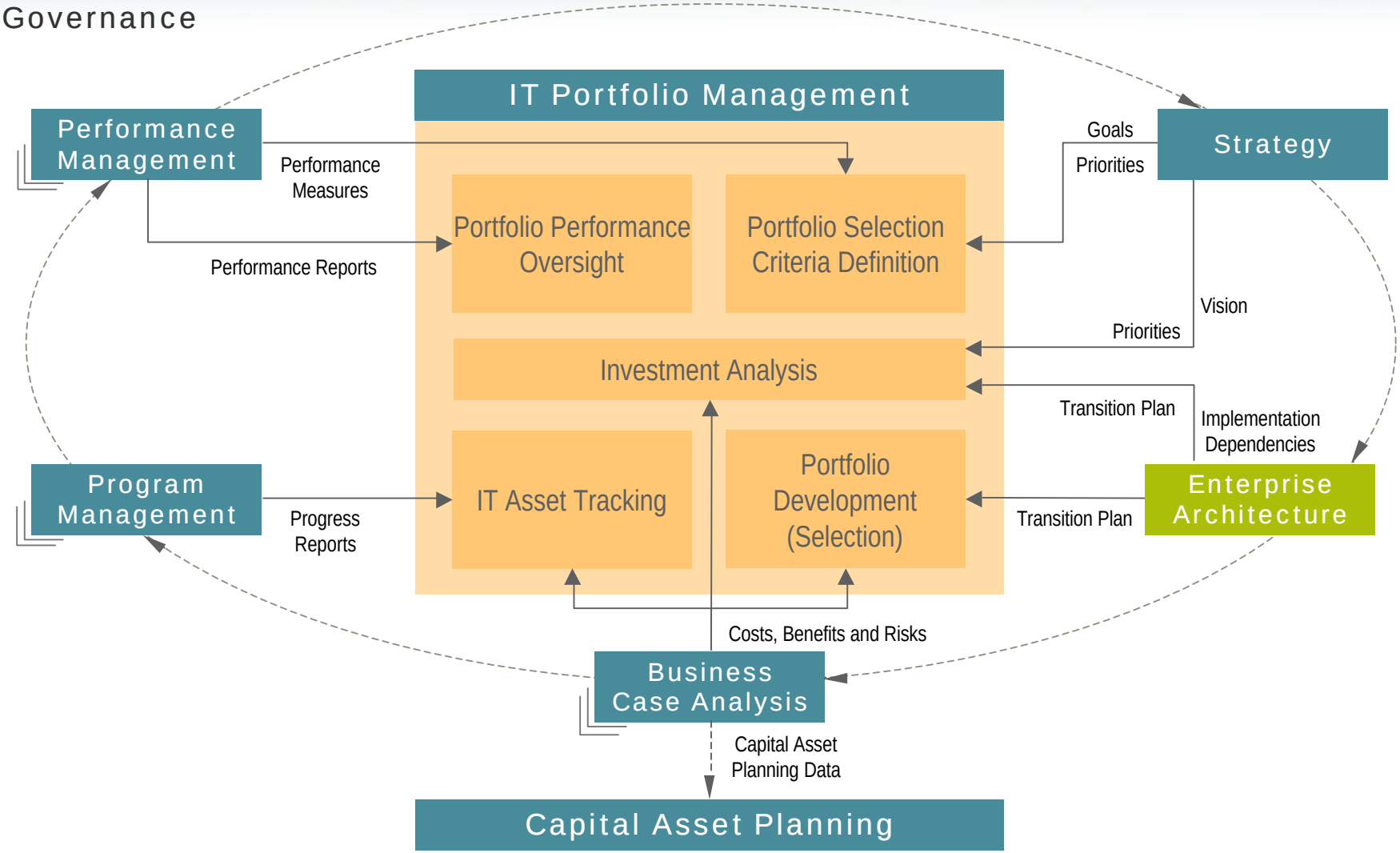
IT Governance



Dependencies Among EA and Other IT Governance Processes

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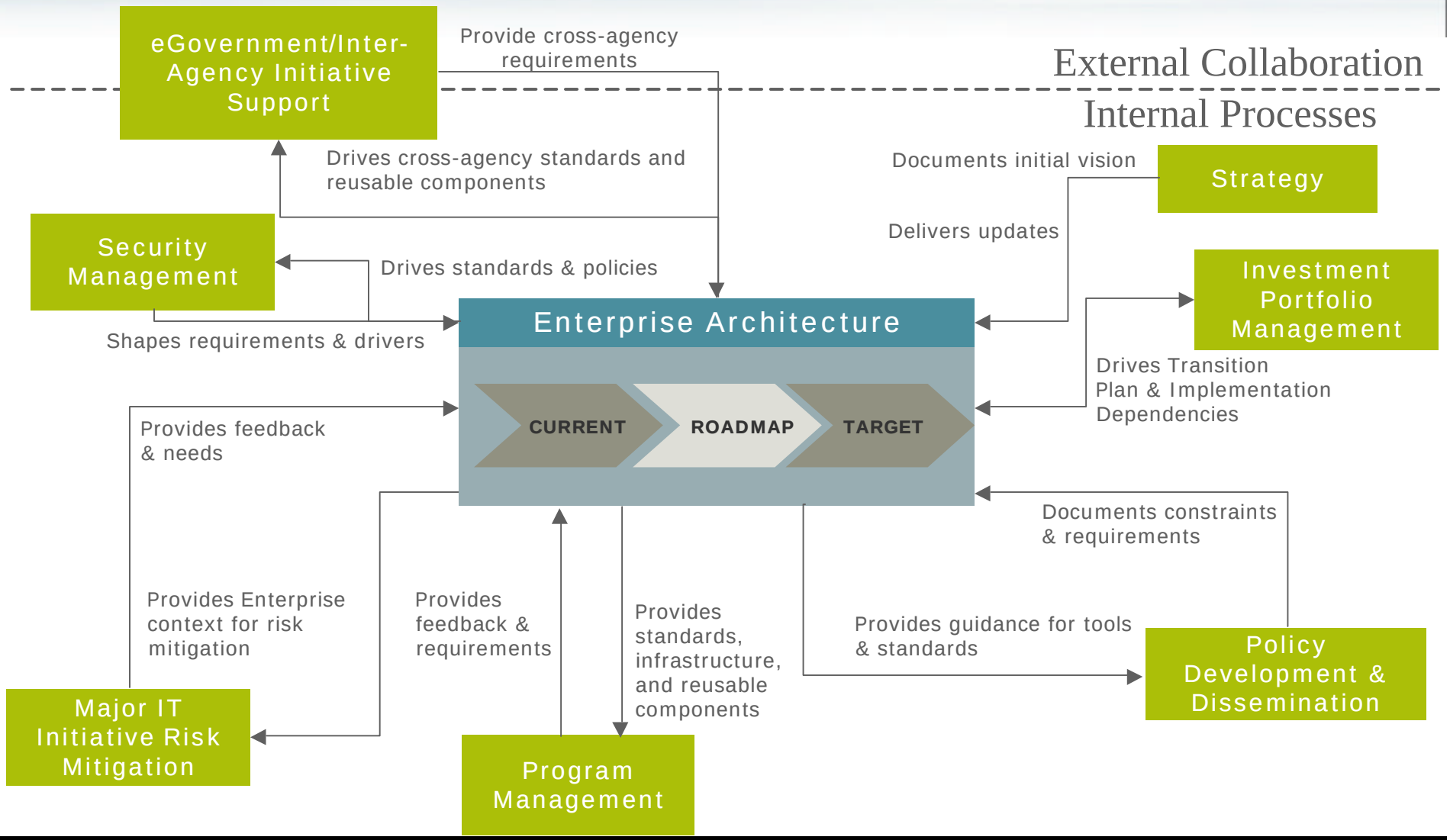

Many Takes and Approaches on EA But Many Similarities

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Public Sector

- NASCIO EA Toolkit
- NIST Reference EA
- DoD JTA & Frame2
- Federal Enterprise Architecture
- Efforts by individual states and agencies

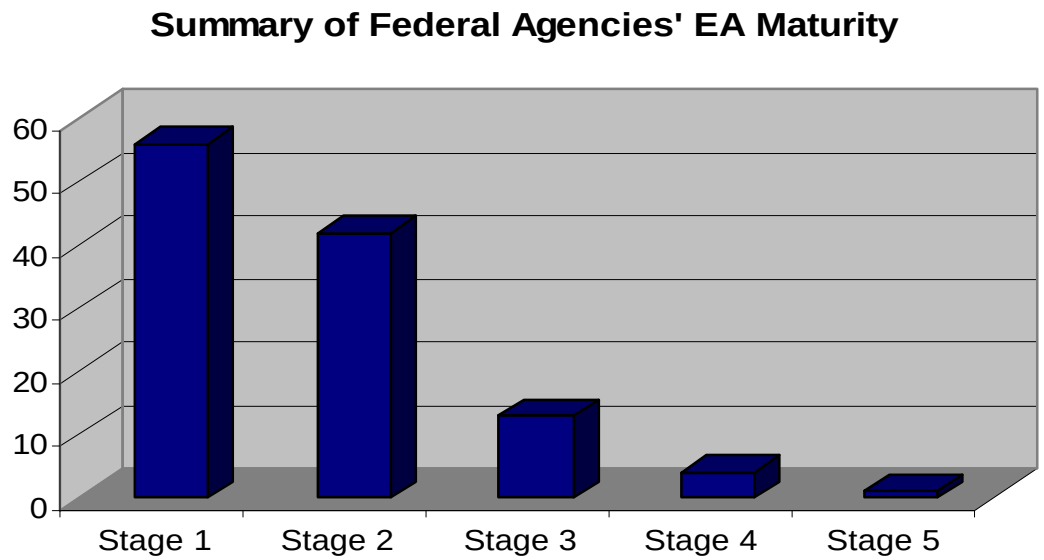
Private Sector

- IEEE 1471 (and 1003.0)
- ISO RM-ODP
- Zachman Framework
- Spewak EAP
- TOGAF
- NCR OCCA
- Spirit

Federal Agency EA Maturity - 2002

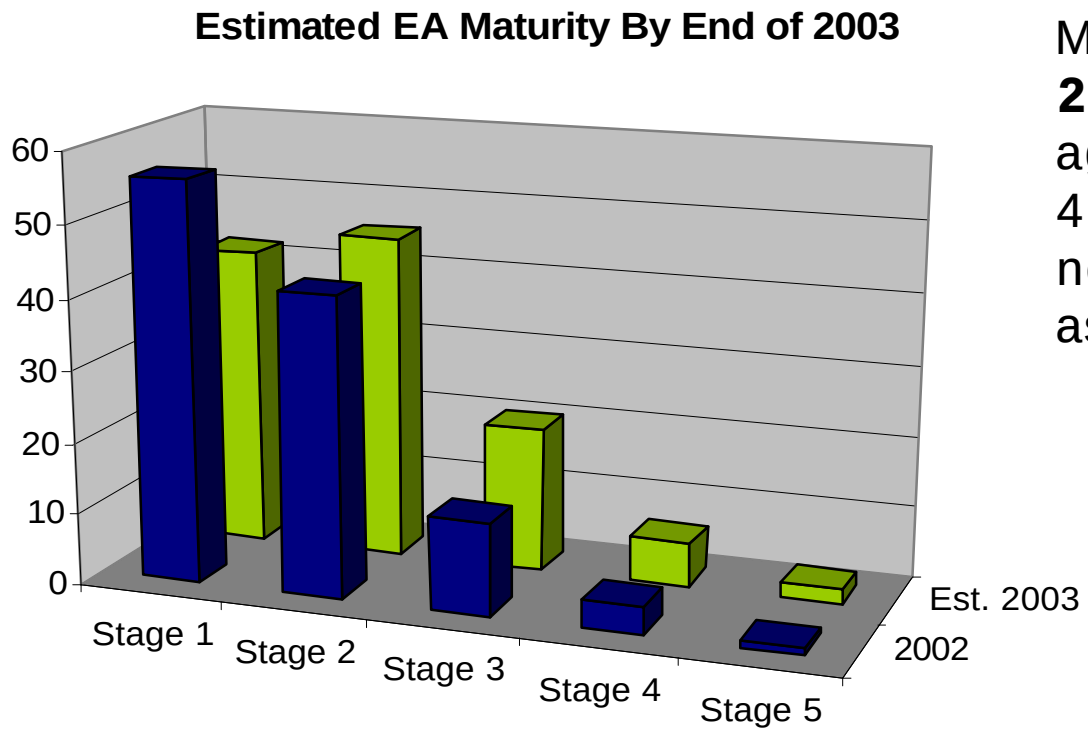
The most recent GAO survey of agency's EA maturity (reported in February 2002) found:

- The majority of agencies had ***not*** reached Stage 3 Maturity (Developing Architecture Products)
- Only one had reached Stage 5 (Leveraging the EA to Manage Change)



Source: *Information Technology: Enterprise Architecture Use across the Federal Government Can Be Improved* (GAO, February 2002)

Federal Agency EA Maturity —2003 (Estimated)



This graphic displays EA Maturity **by the end of 2003** assuming 25% of agencies in each of the first 4 stages advanced to the next stage. Based on this assumption:

- 75% of agencies will have begun building the EA management foundation
- Only 7% will be completing EA products and/or leveraging the EA for managing change

Based Upon: *Information Technology: Enterprise Architecture Use across the Federal Government Can Be Improved* (GAO, February 2002)

What is EAI?

Enterprise Application Integration

is technology and processes for integrating disparate applications within or between enterprises.

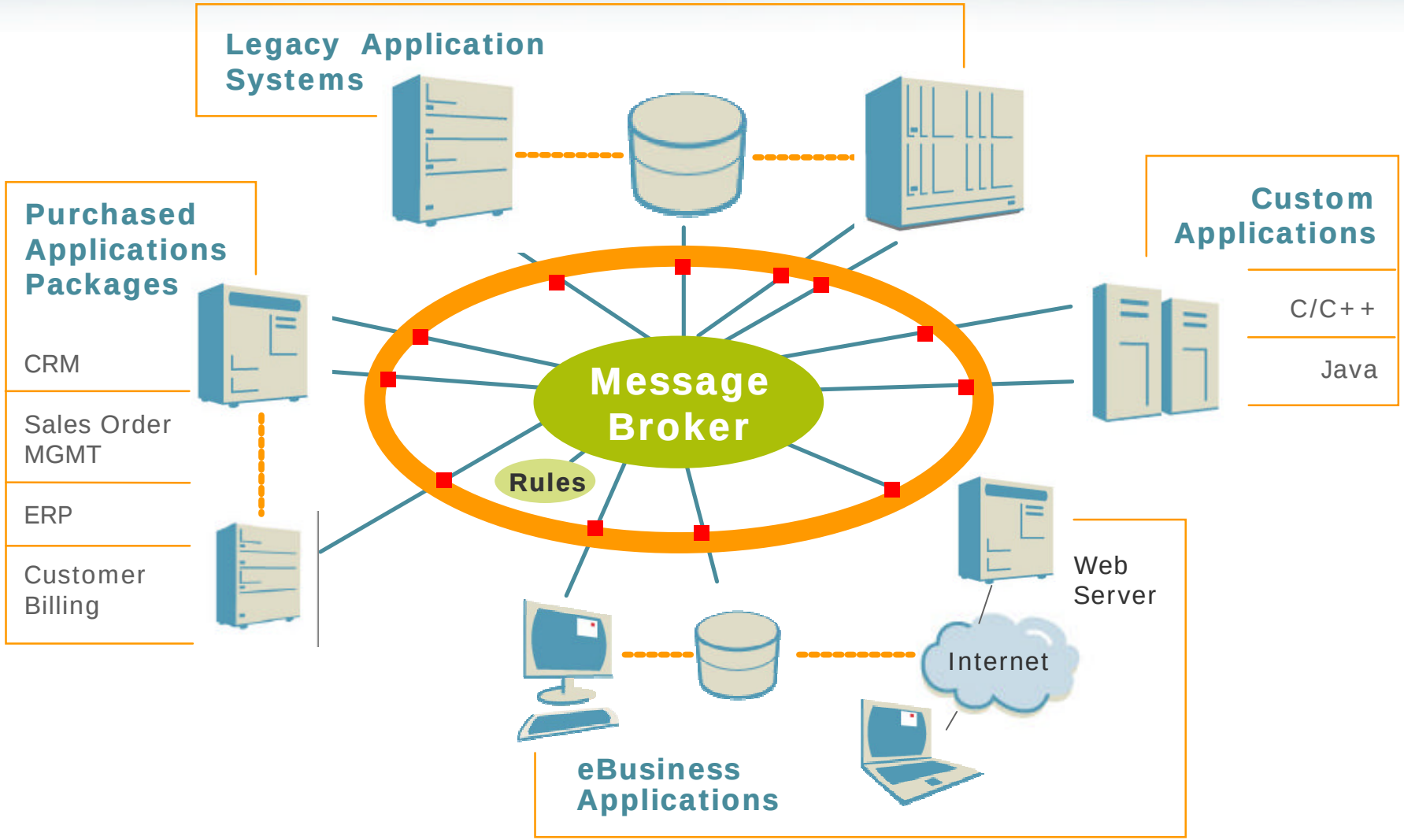
- **Non-invasiveness**
- **Rapid deployment and change**
- **Reusability**
- **Standard mission critical attributes (performance, security, reliability, etc.)**

Components of EAI

- Messaging
- Transformation
- Intelligent Routing
- Business Process Integration

Many EAI vendors are trying to provide the entire stack

Enterprise Application Integration



What are Web Services?

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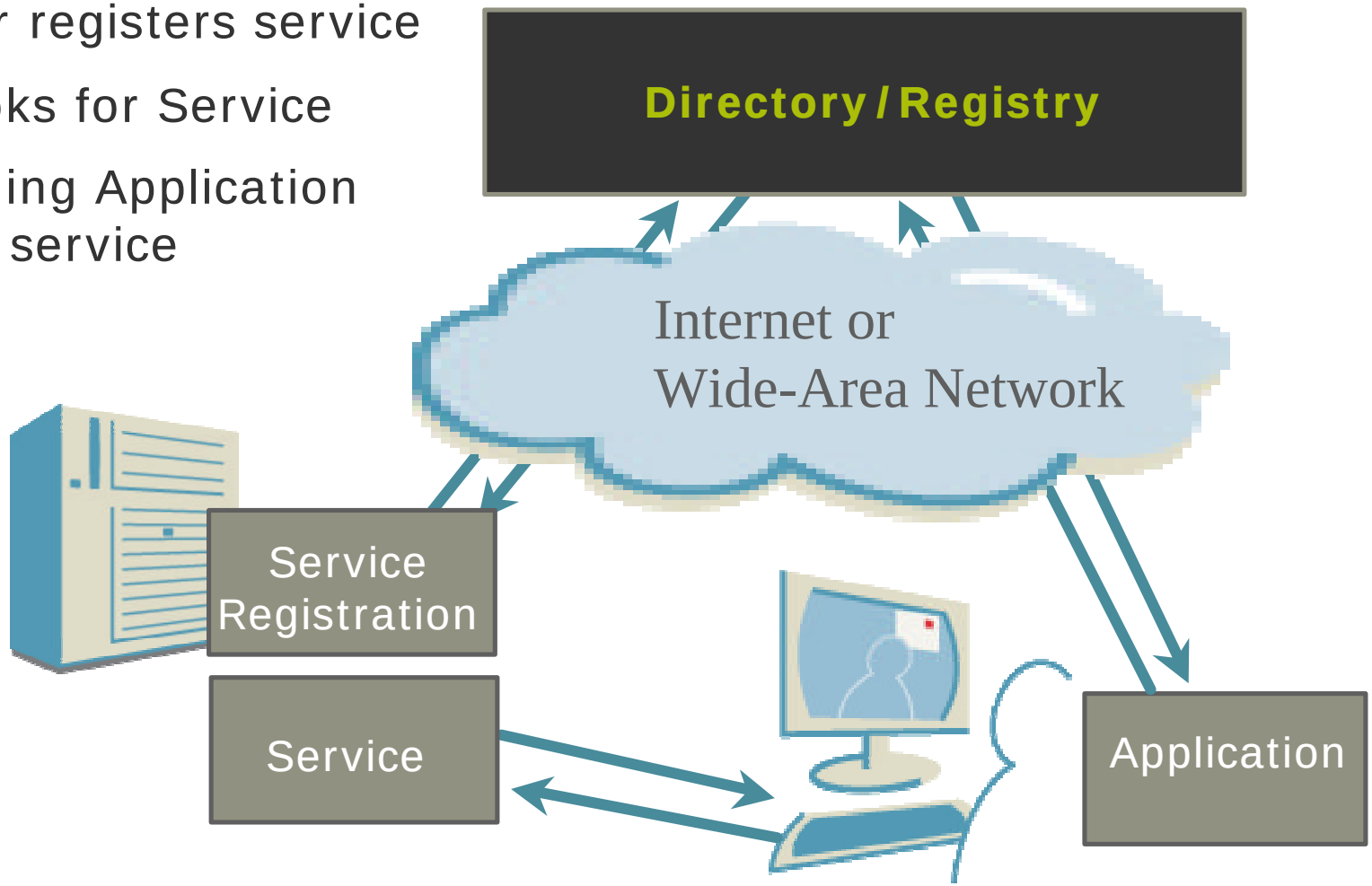
A web service is a **software component** that represents a business function (or a business service) that can be **accessed** by another **application** (a client, a server, or another web service), over public networks and using generally available **ubiquitous** protocols and transports.

Simple Visual Example

- Provider registers service
- App Looks for Service
- Consuming Application invokes service



Web Services and EAI

- Web Services SOAP could be viewed as an API in the context of EAI
- Web Services adapters and tools have started appearing in EAI product suites
- Watch emerging standards for Web Services relevance
  - Process flow (WSFL, XLANG, BPML, BPEL)
  - Transaction management (XAML/BTP)
  - Security (SAML, XACML)

Enterprise Architecture in State Government / DHFS

Tony Rodriguez, Partner

ALR Healthcare Consulting

DHFS HIPAA Privacy Consultant

What is HIPAA?

Health Insurance Portability and Accountability Act of 1996

- Privacy, Security and Transactions of Health Care
- Affects Providers and Providers of Health Care
- Consumers of Health Care Have New Rights
- More Changes Coming Down the Road
- Technology and Cultural Changes

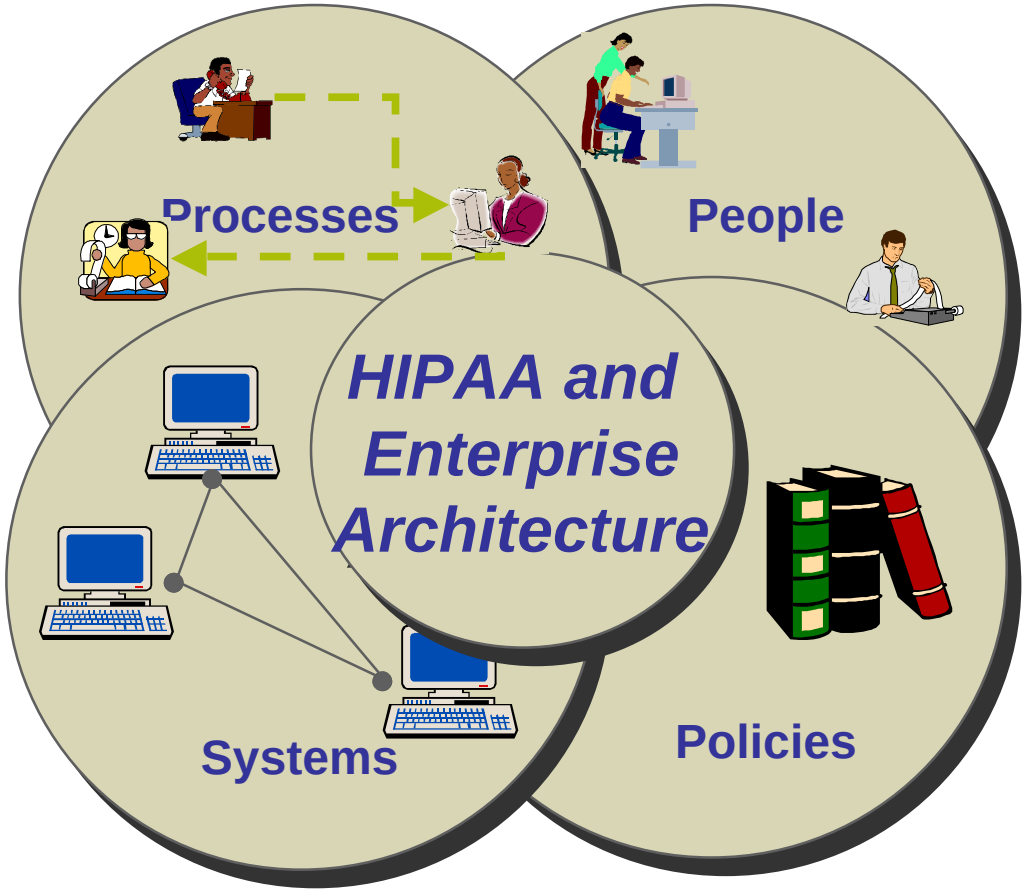
HIPAA and Enterprise Architecture

Premise 1

HIPAA is a Massive Enterprise/Industry Integration Effort

Premise 2

Wisconsin can Apply HIPAA Implementation Experience to Future EA Efforts



HIPAA and Enterprise Architecture

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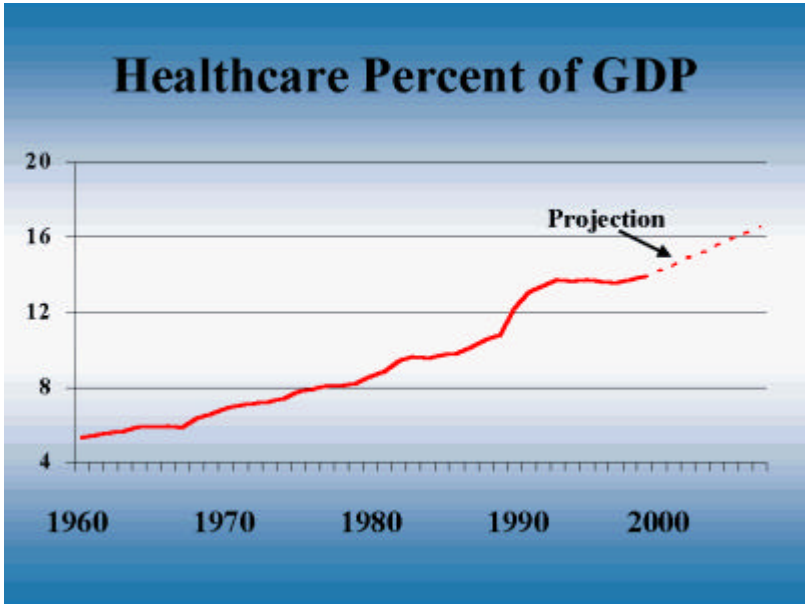
A Grass Roots Effort
or a Mandate?

Not A Project: A Movement

Be Careful. You Might Get What You Ask For.

HIPAA is Limited in Scope - Healthcare

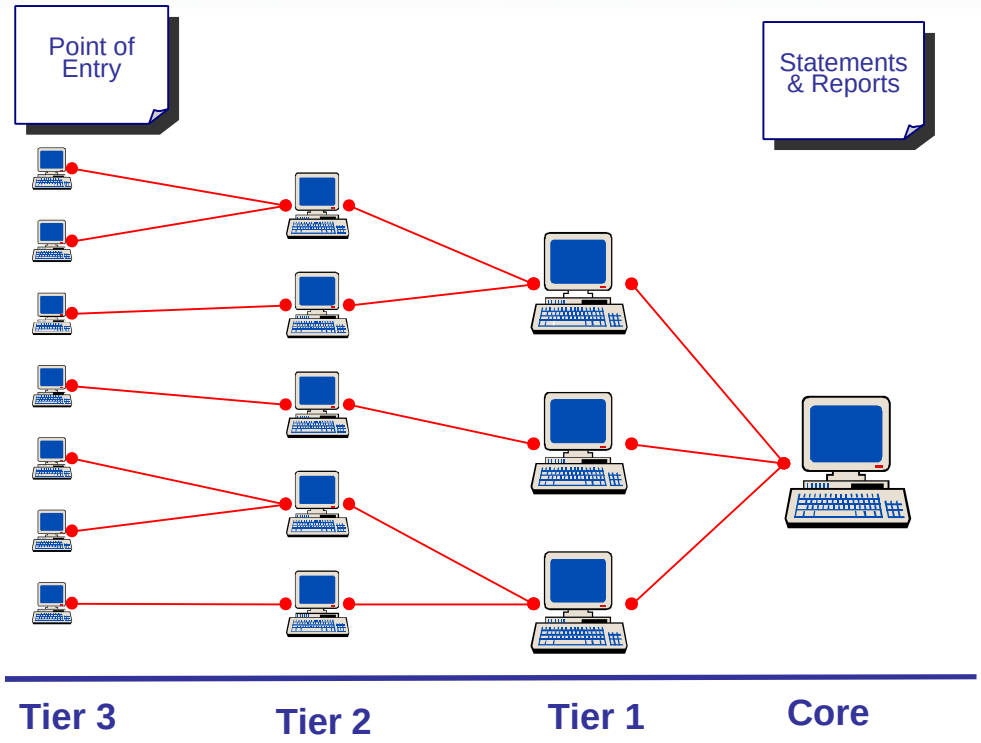
HIPAA and Enterprise Architecture



- HIPAA began in 1986 - 17 years and Going Strong
- Massive EAI Effort Healthcare is 16% of GDP
- Cost Containment
- Part of Bigger Picture

16% of Gross Domestic Product = 1.7 Trillion Dollars

HIPAA and Enterprise Architecture



Many Systems Approach

- *Inefficient and Costly*
- *Risk of Reliability and Timeliness*

Core Systems Approach

- *Fewer Systems*
- *Cost Efficient*
- *More Reliable and Timely*

In 1986, 437 Different Claim Formats Identified – Today 1

Well, Almost…..

HIPAA and Enterprise Architecture

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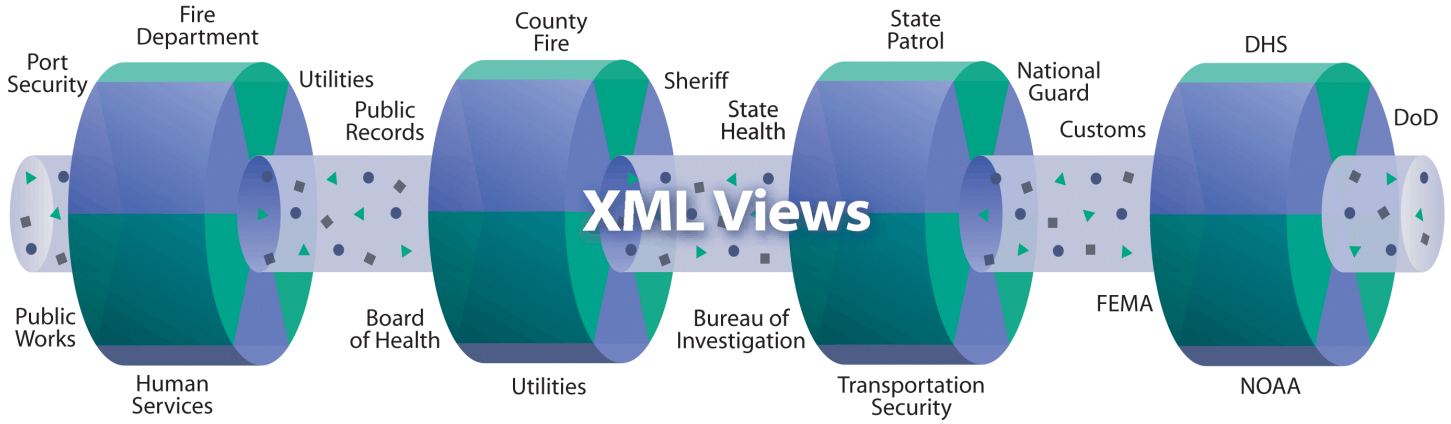
HIPAA Presented A Moving Technology Target



XML vs. EDI STANDARD AND INTERFACES

HL7 vs. X12 STANDARD AND INTERFACES

HIPAA and Enterprise Architecture

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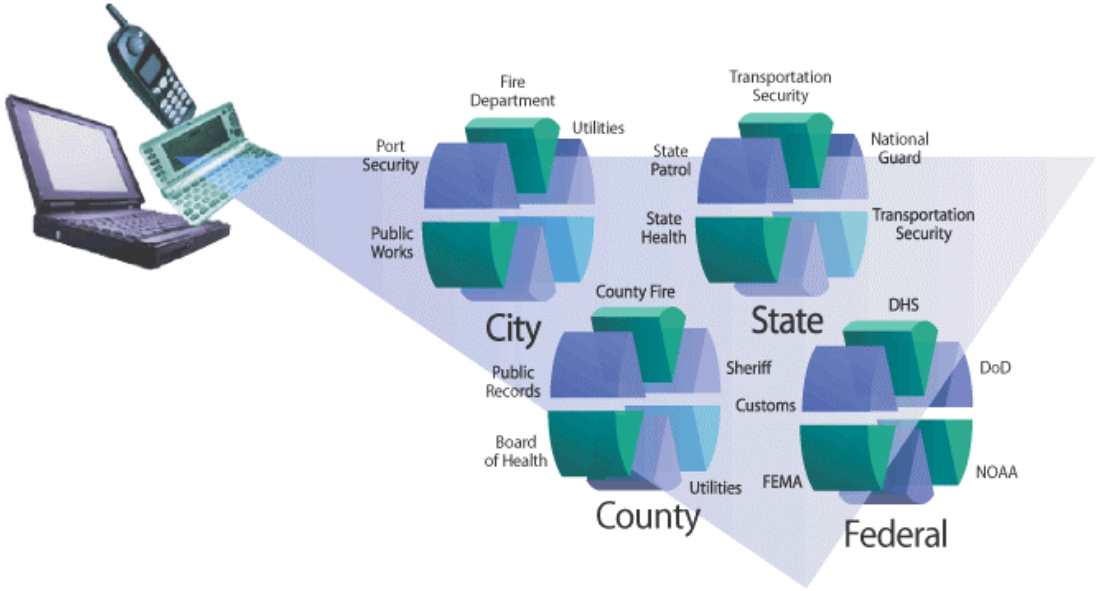
Think Strategically. Act Tactically.

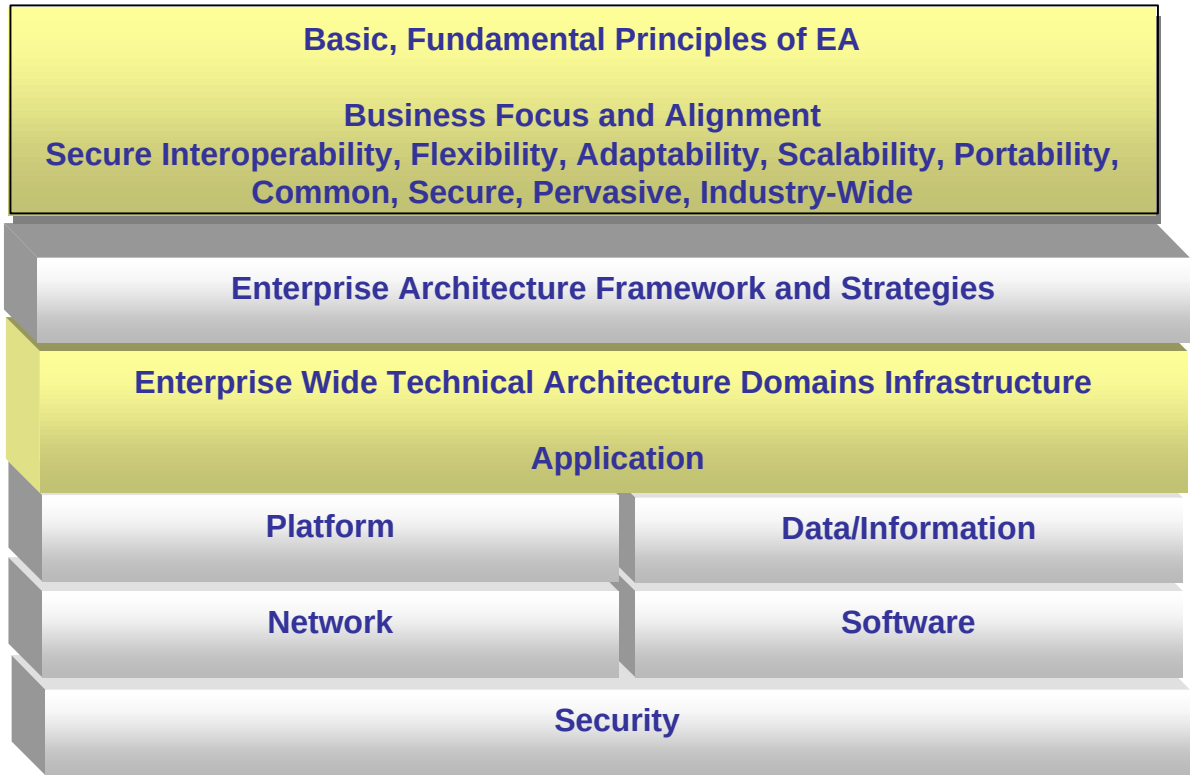


Identify End User Communities Including:

- Law Enforcement
- Court System
- DOT
- Service Agencies
- Regulatory Agencies
- Social Services
- Other Users

End User Functionality and Value is Essential to Buy-In and Success

HIPAA and Enterprise Architecture



HIPAA Touches or Will Touch Each Area

Performance Reference Model

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Staying on Track for the Duration – A Long and Winding Road

OUTCOMES: Mission-critical results measured from a business or program and customer perspective

OUTPUTS: The direct effects of day-to-day activities and broader processes agencies conduct measured as driven by desired business and customer results

INPUTS: People, technology, and other fixed assets measured through their contribution to processes and activities – and by extension business and customer results

HIPAA Approach Minimizes "Sacred Cow" Projects

Business Reference Model

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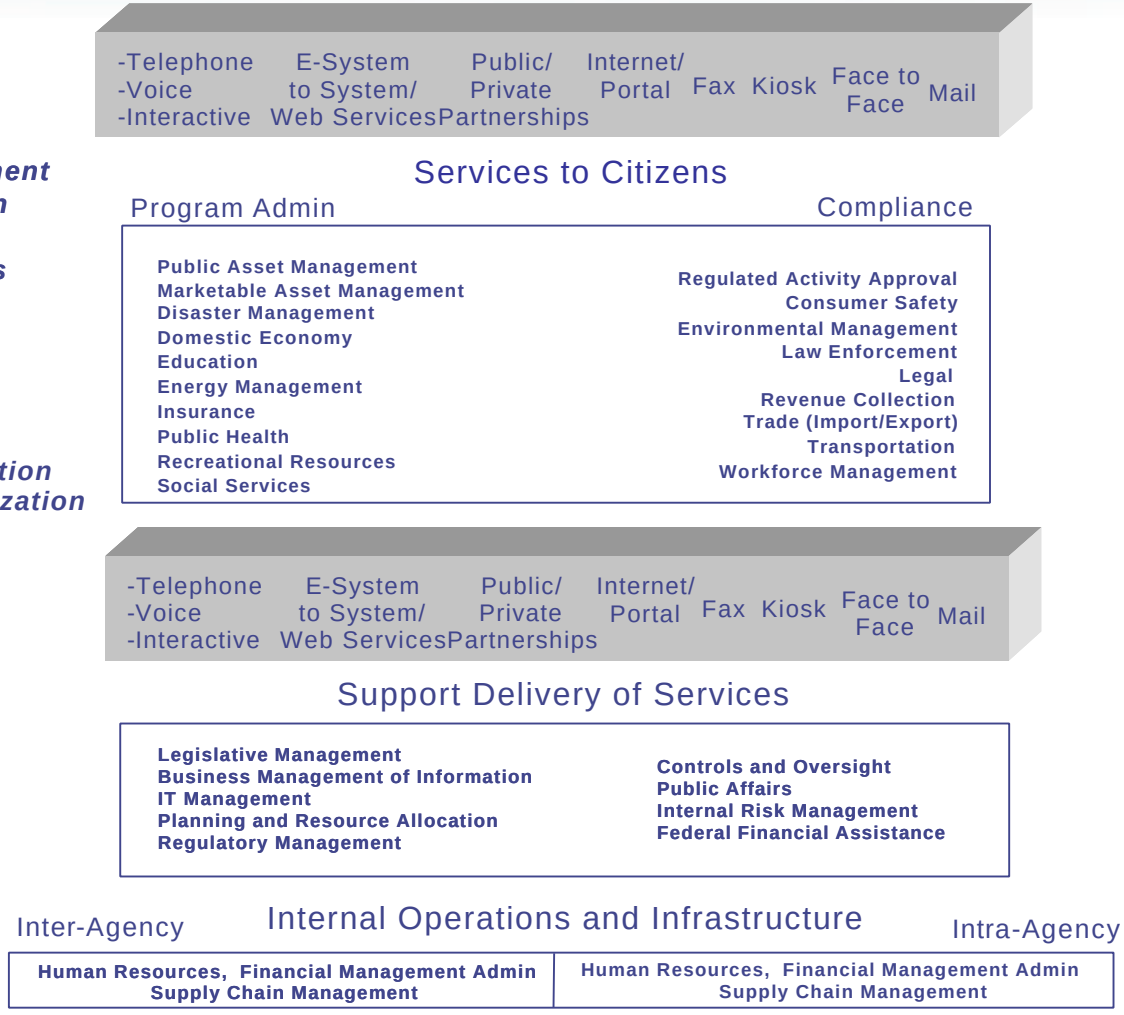
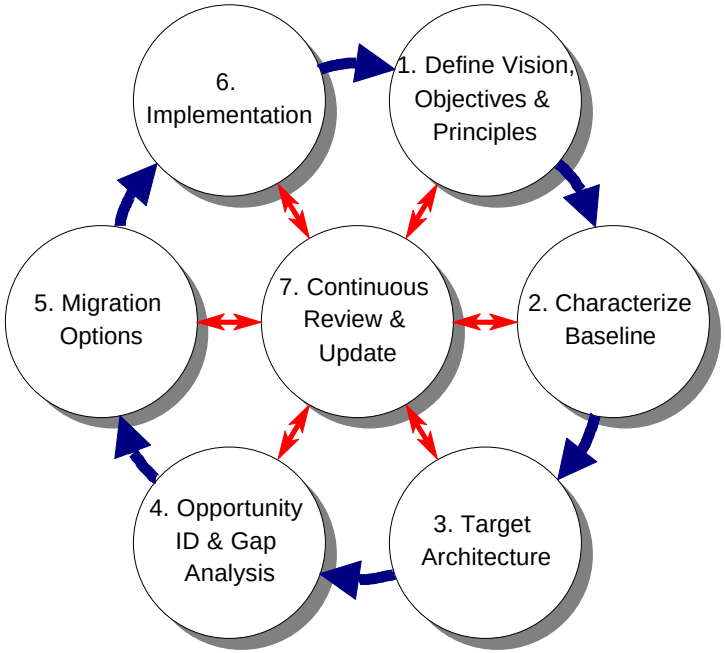


Ripple effect of HIPAA is Affecting the Entire Healthcare Industry and Beyond – Changes Resulted in Significant Amounts of Change Management Activity At Channel Points

Enterprise Architecture

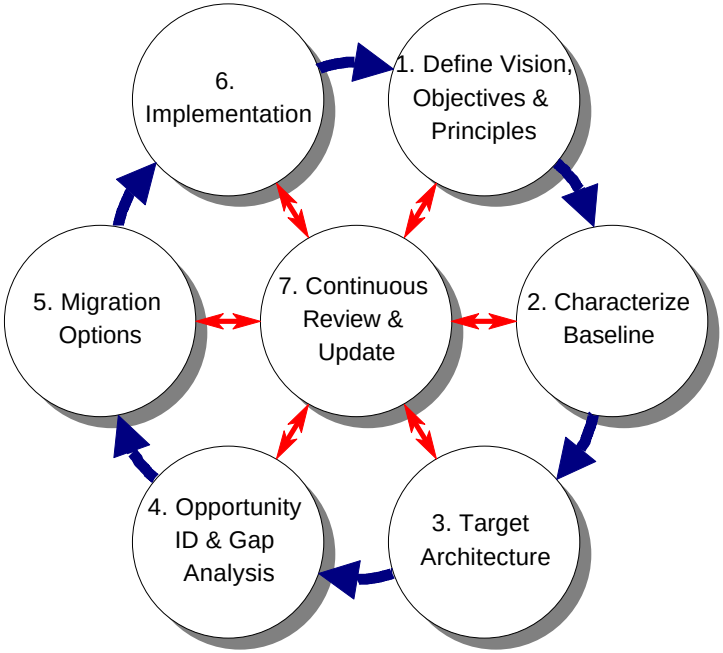


Enterprise Architecture

- Flexibility in Approach
- States typically “hard-wired”
- Fed Legislative vs. State Process
- Wisconsin Joint Finance Committee
- DHFS IT Steering Committee
- Business Case Analysis Vacuum
- Silos
- Counties already operate around EA concepts

What Does Today Look Like?

Enterprise Architecture



What Can Be Changed?
Who Will Benefit?
Risk Level?

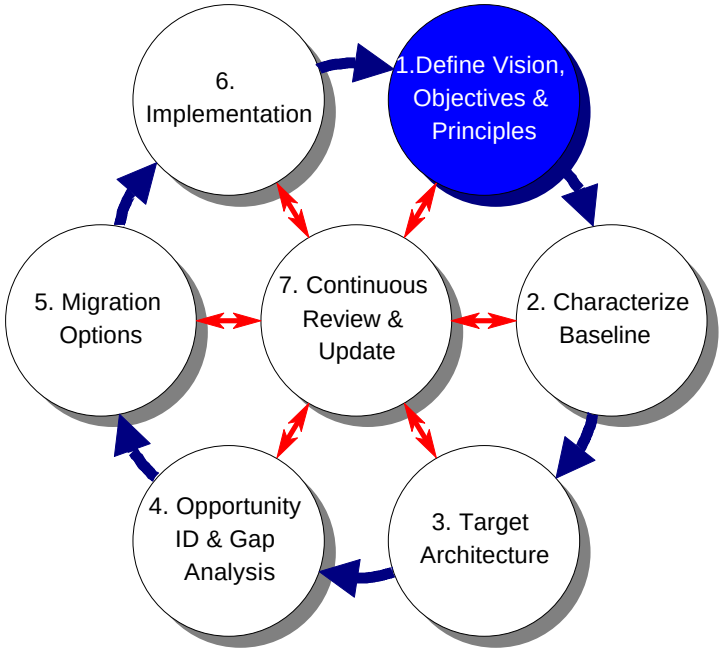
Types of Systems

- Core Systems
- Non-Discretionary Systems
- Discretionary Systems
- Innovative Delivery Systems
- Economic Management Systems

Types of Benefits

- Operational Benefits (i.e., Efficiency)
- Improved or New Service Levels
- Social Benefits to Citizens
- Client Cost Savings or Indirect Cost Impacts

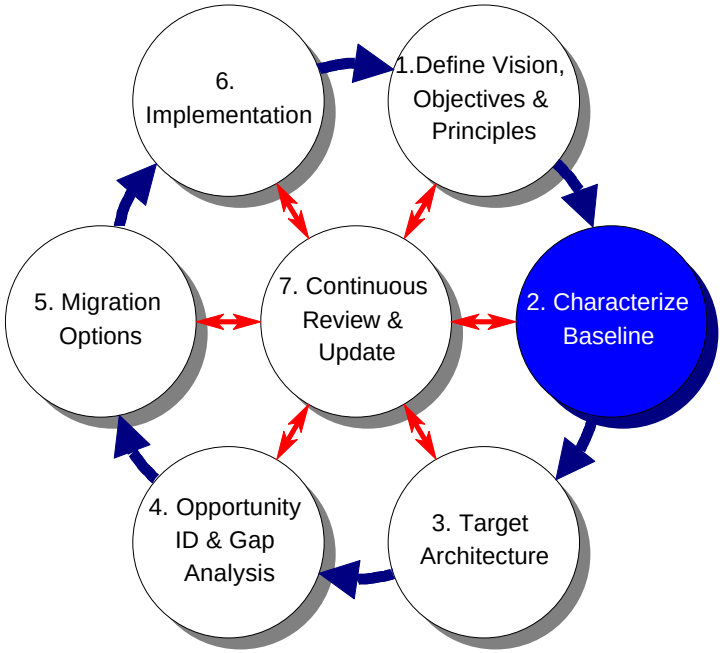
Define IT Vision, Objectives and Principles



Many Organizations Held Their Breath Pre-HIPAA Deadlines and are now Paying the Price of Poor Planning

- Establish Process, Scope Teams and Budget (Doable)
- Determine Business Drivers
  - States Balanced Budget Amendments
- Business Context Diagram
- Develop Vision and Objectives
- Guiding Principles
- Best Practices

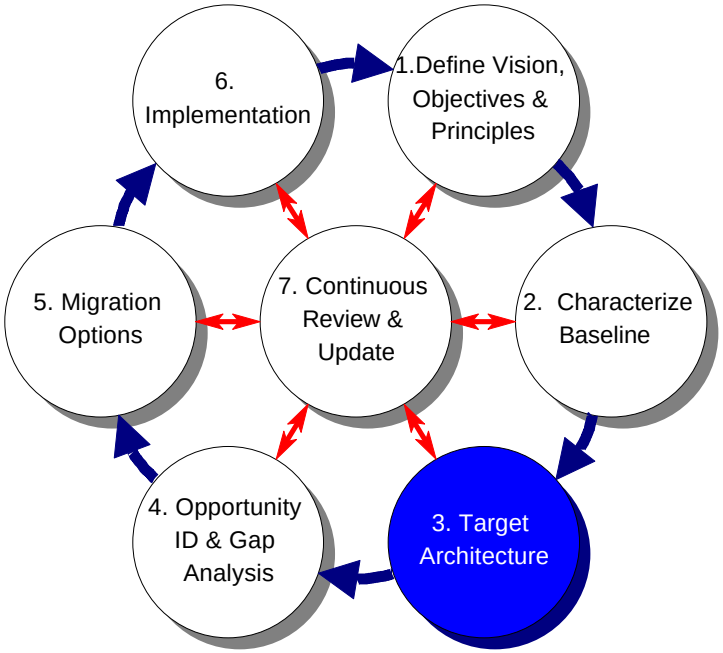
Characterize IT Baseline



HIPAA Allows Flexibility - Translates into Pain Avoidance by Implementers – Not all Cost Savings Initially Realized – Even Low Hanging Fruit is at Risk

- Establish Baseline
  - Normalization
  - User Constraints
- Gather Data
  - Conduct Interviews
  - Surveys and Workshops
- Master EA Database
  - Portfolio Management
- Summary Report(s)

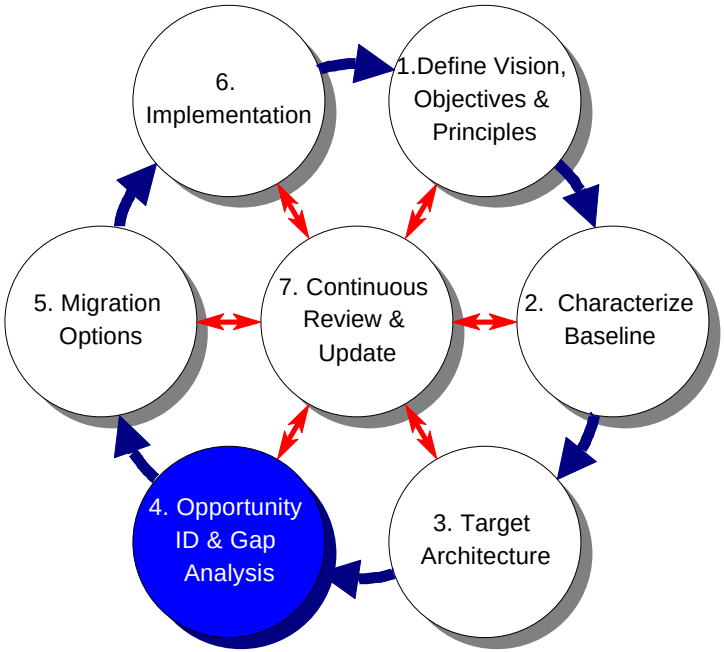
Create IT Target Architecture



- Model Each View Separately
- Architectural Components and Relationships
- Synthesize Views into a Target Architecture
- Identify Foundation Technologies and Standards

HIPAA Required Use of Existing Industry Standards Did Not Allow New Standards to Be Created

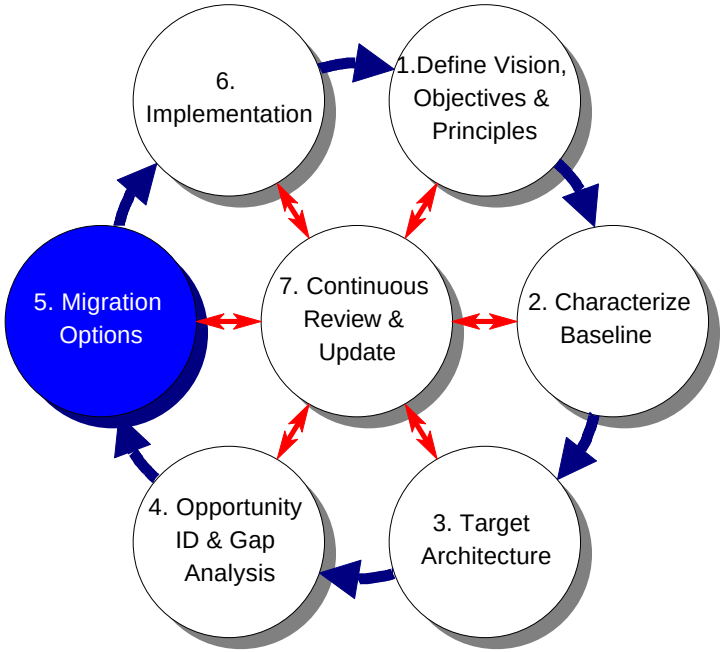
Identify Immediate and Future Opportunities and Perform Gap Analysis



- Identify Projects and Timelines
- Identify Short-Term Opportunities
- Validate Low-Cost, Quick-Win Projects
- Gap Analysis
- Realistic timelines and change drivers

Prioritize Gaps and Target Efforts Appropriately

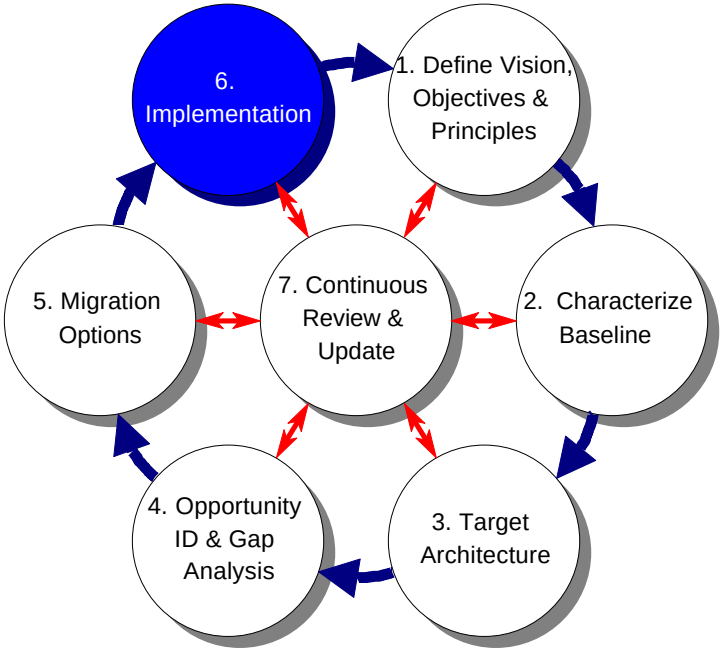
Develop Migration Options



- Establish Short, Medium and Long Range Objectives
- Prioritize Projects
- Perform Alternatives Analysis
- Plug Pulling Criteria – Failure Indicators

Data Integrity, Normalization, Technology Changes, Management Challenges, Economic Shifts, Legislative Mandates

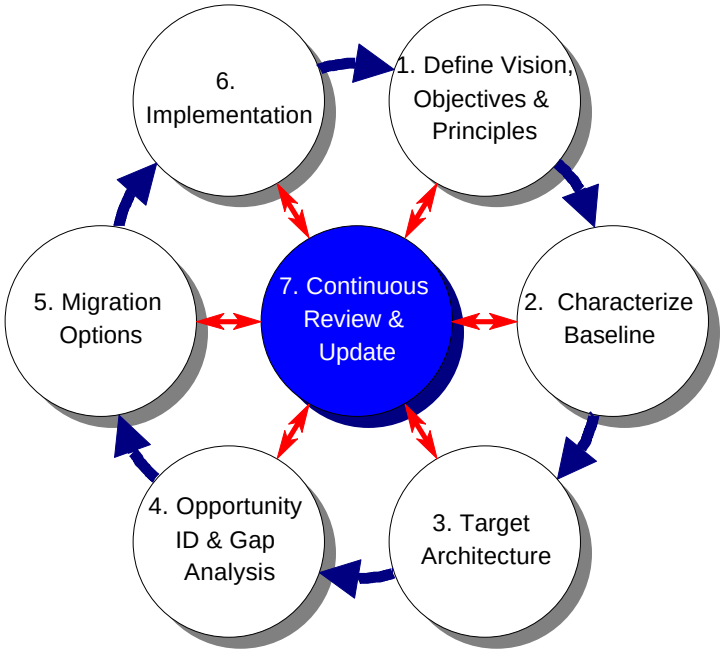
Implement IT Target Architecture



- First Wave of Projects
- Establish the Roadmap
- Establish Responsibilities
- Update Migration Plan Frequently

Capture Key Learning Early and Apply Often
Fail Early, Fail Often

Continuously Review and Update IT EA



- Unforeseen Changes
- Adjustments Based on Experience
- Ensure Modifications Reflect a Realistic Approach
- Include review of “tradeoffs”

Frequent and Focused Review of Progress and Next Steps Hard to Manage - Even Harder if Not Managed

Business Lines Analysis

Enterprise Architecture "Mind Munchies"….

- What Business Lines are Performed by the State?
- What Systems and Processes Support These Business Lines?
- What Standards Could be Adopted from Industry?
  - Social Service Agencies – Multiple County Structures
- Ultimate Goals

Potential Benefits and Motivators

Enterprise Architecture "Mind Munchies"….

- Client Centric Projects – Tony's "Big Bang" Theory
- Improve Ability to Interact with Clients – Who is the Client?
- Cost Reductions in IT Procurements and Expenditures
- Create More Efficient and Replicable Business Processes

Example: Facilitate support for budget approval through OMB and Congress. For instance, OMB withheld $400M from INS because the Bureau did not have an IT Architecture Plan

Enterprise Application Integration: Local Government Perspective

Michael L. Enstrom

Ozaukee County

Line-of-Business Responsibilities

- **JUSTICE**: Circuit Courts, Juvenile Courts, Family Courts, D.A.s, Sheriff, Emergency Mgmt, Clerk Of Courts, Coroner, Register in Probate
- **INFRASTRUCTURE**: Land/Water, Highway Dept, Transit, Parks, Facilities, Treasurer, UWEX
- **HUMAN SERVICES**: Environmental Health,Social Services, Behavioral Health/AODA/Counseling, Aging Services, Public Health, Long-term Care Facility, Veterans Services
- **SUPPORT**: Personnel, Finance, Corp Counsel, IT, Administrative Coordination, County Clerk

Multi-Tier Integration Map

LOB Functions	Support Functions	Strategic Functions
Case Management	Financial Tracking	Outcomes Mgmt
Referral Management	Grant Tracking	Workflow Administration
Common-Intake Systems	Local Reporting Systems	Headcount Planning
Tactical Interfaces (Justice, other Sys)	Security/Privacy Mgmt Systems	Staff-Training & Performance Mgmt
Workflow Task Processing	State/Fed Reporting Systems	Business Rules Development
Provider Mgmt	SSO/Login Control	Compliance Mgmt

Stakeholders: Who's Utilizing County Functions

- **Residents/Constituents**
- **State** expects Counties to deliver required services
- **Municipalities** integrate w/ County systems
- **Third-Party** businesses (non-profits, for-profits) expect County to lead, as well as be a customer
- **Other Counties** via "shared service" arrangements

Stakeholders: Who's Funding County Services

- Federal funding streams
- State funding streams
- County Tax Levy
- Municipalities
- Fees for some services

- All have their reporting/compliance requirements

Buy-In: Customers vs Consumers

- "Process re-designers don't need to identify "customers." They need to identify "consumers."
  - Bob Lewis, InfoWorld
  - Customers make buying decisions
  - Consumers use Products/Services/Systems

- "[People] embrace technology that helps them. If you want a system to succeed, design it so it gives something back to the people who will be using it."
  - Who's funding your development?
  - Who's using what you've developed?

Ownership / Stewardship

- Ownership: Each funding “customer” expects Local Govt to fulfill negotiated or mandated requirements

- Stewardship: Turnover in leadership & committee membership requires ongoing “re-learning” of practices…Long-term Govt employees hold the “institutional memory” of “How Things Work”

EAI Components: Technical & Administrative

- Data
- Business Processes
- Platforms
- Budgets
- Physical Locations
- Constituencies Served
- Training
- Standardization of Workflow Across Business Units
  - Vertical & Horizontal integration

EAI Components: Interpersonal Factors

- Today's Guru may be Tomorrow's Skeptic
- Resistance to Change
- Fear of Risk – Institutional, Financial & Professional
- Career Trajectories
- Training
- Sense of Accomplishment, "Ownership"
- Expectation of Reward/Growth/Recognition
- Compensation & Skill-set Development
- "Business Quality of Life" – Improved Focus on Mission

Barriers to Integration

- Funding: “Silo-based Funding” vs. “Cross-Integration Funding”
- Expectations: “How quickly can we be up & running?”
- Support: Who’s responsible for integrated operations?
- Staffing: Skill-sets, Organizational Model
- Training: Negotiated as a Deliverable -- Ongoing
- User Readiness: Partners or Users
  - Partners are “committed”
  - Users are “involved” – willingly or not
- Leadership: Changing Status Quo may shift Control dynamics

Enablers for Integration

- Executives/Board wants County to **operate as an enterprise business**, not a collection of silos
- Grant availability for e-Govt Technology Enhancements
- Opportunities for Public/Private Sector partnerships
- Consumers want Web-access on-demand
- Staff can't support infinite point-to-point integration
- Finite amount of training time; optimize its use
- User feedback can drive Leadership to action
- Stakeholder buy-in can greatly influence momentum

Developing an Integration Model

- Who can accurately portray a business process?
  - Developers may be “tunnel-visioned”
  - Users are not typically “experienced” Requirements-Gatherers
  - Need focused Team Leaders to consider all groups’ process needs
  - Consistent, Active Project Management efforts are needed
- Design for Flexibility
  - Don’t design for “today’s” business – plan flexibility for future needs, and expect change!
- Continuous or Exception-Based Re-Analysis?
  - In either case, keep the model accurate for business’ needs

Application Interface Development

- Process Description (Today's Processes)
  - How is application interface supported by State?
  - How is application interface supported by County?
  - Is application interfacing supported by 3rd Parties?
  - What's the relationship between the various support groups? (a dimension unto itself)
  - Need for "governance"
    - Balance Stakeholders' Expectations w/ Achievable Goals

Application Interface Development

- Process Description (Future Version)
  - What Business Problems would be Solved by Proposed Change?
  - Scope
    - Technologies
    - Support (by whom? within what boundaries?)
    - Functions
    - Tactical/Strategic Data Collection: what are the Goals to be met?
  - Costs/Priorities/Quality Standards
  - Standardization of interfacing methods

Application Interface Development

- First Steps
  - Define why integration is worth pursuing
  - Define which “sacred cows” exist (ask why!)
  - Clarify “Security” vs “Privacy” conventions
  - Develop MOUs on Governance
  - Clarify Ongoing Metrics to verify Deliverables

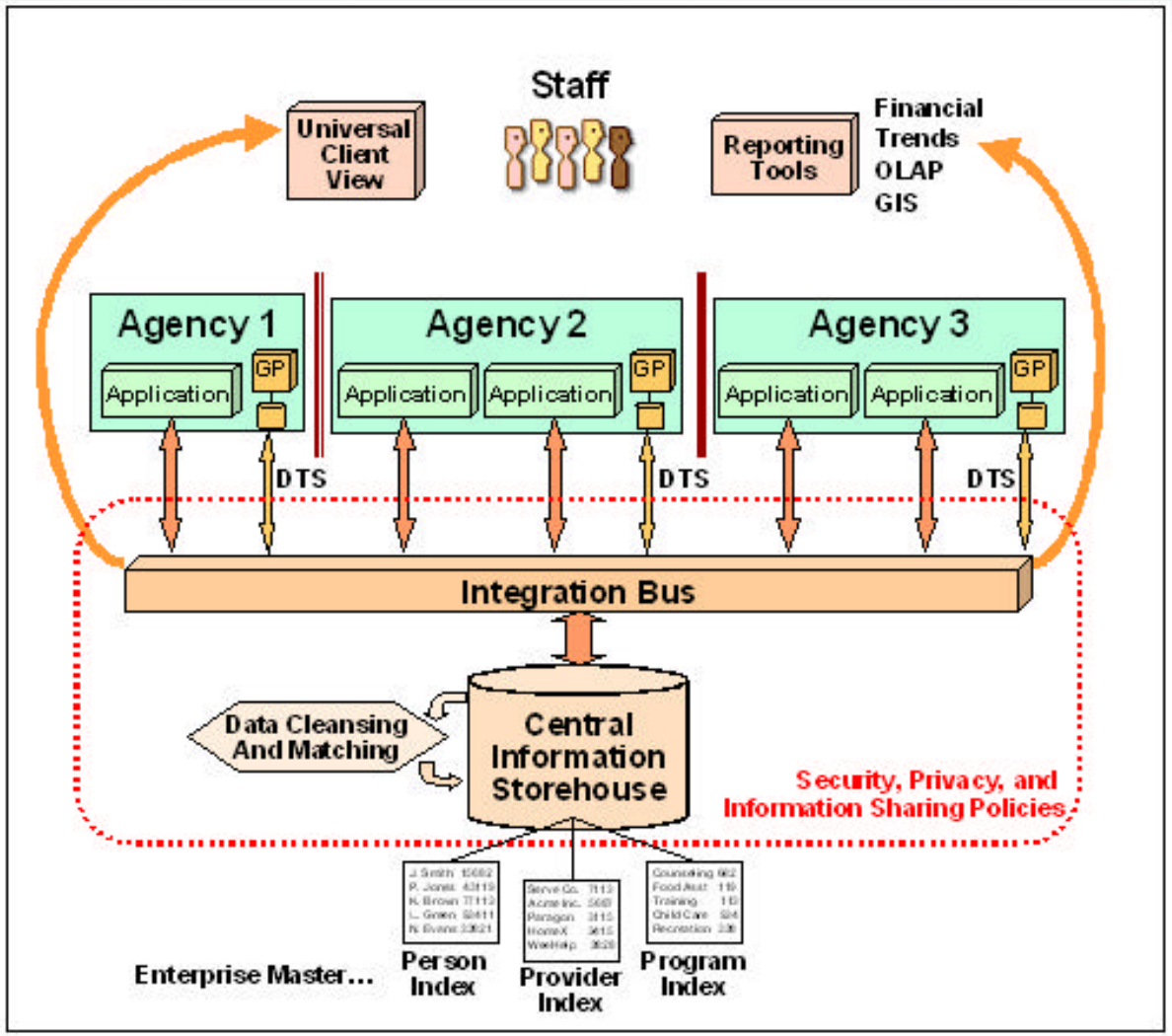
Application Interface Development

- Last Steps
  - Post-Implementation Review
    - Which deliverables were difficult to accomplish?
    - Which cost/time estimates were near-misses?
    - Which areas were identified for future integration?
    - What lessons were learned for next time?
  - Build on Lessons Learned for Future Projects

Criteria for an Integrated Platform

- Non-invasiveness (each Silo retains its own focus)
- Rapid deployment and change
- Reusability
- Standard mission critical attributes
  - Performance
  - Security
  - Reliability
  - Minimal “frame-of-reference” shift
    - Let Administrators (Not Users) focus on Infrastructure
    - Keep User focused on their real Mission tasks
    - Enable Sponsors’ ability to verify Mission Goals are met
- Enables “new information” capabilities
  - Provides innovation in perspectives for analysis
  - Improves throughput and operational consistency
  - Removes barriers to collaboration between teams

An Integrated Government Services Platform



5 Elements of an Integrated Govt Services Platform

- Standardized Security Model
- Enterprise Master Client Index
- Standardized Business Rules Model
- Standardized Financial Model
- Standardized Reporting Model

5 Elements of an Integrated Govt Services Platform

- Standardized Security Model
  - Role-based Security
  - Rule-based Security
  - Enable True Single Sign-On, where feasible

5 Elements of an Integrated Govt Services Platform

- Enterprise Master Client Index
  - Common Service Intake Process
  - Referral Management Process
  - Unique Client ID w/ Agency-specific sub-IDs
  - Support extensible “Minimum Data Sets” and Service Taxonomies
  - Integrated w/ Std Security Model

5 Elements of an Integrated Govt Services Platform

- Standardized Business Rules Model
  - Flowchart-based graphic editing
  - Illustrate, Create, Modify & Manage Business Process "Rules"
  - Hierarchical Rule-set Mgmt (Fed/State/Local/3rd Party)
  - Exception-Handling for Meta-Rules
  - Integrated w/ Std Security Model

5 Elements of an Integrated Govt Services Platform

- Standardized Financial Model
  - Transaction Monitoring
  - Compliance-Monitoring Capability
  - Activity-Logging
  - Grant Mgmt/Administration
  - Integrated w/ Std Security Model

5 Elements of an Integrated Govt Services Platform

- Standardized Reporting Model
  - Analysis Toolsets/"Dashboards"
  - Periodic Report Generation/Automated
  - Repository-Based ETL tools
  - Multi-presentation platform (screen/print/PDA/tablet/voice/wireless)
  - Integrated w/ Std Security Model

Benefits of an Integrated Govt Services Platform

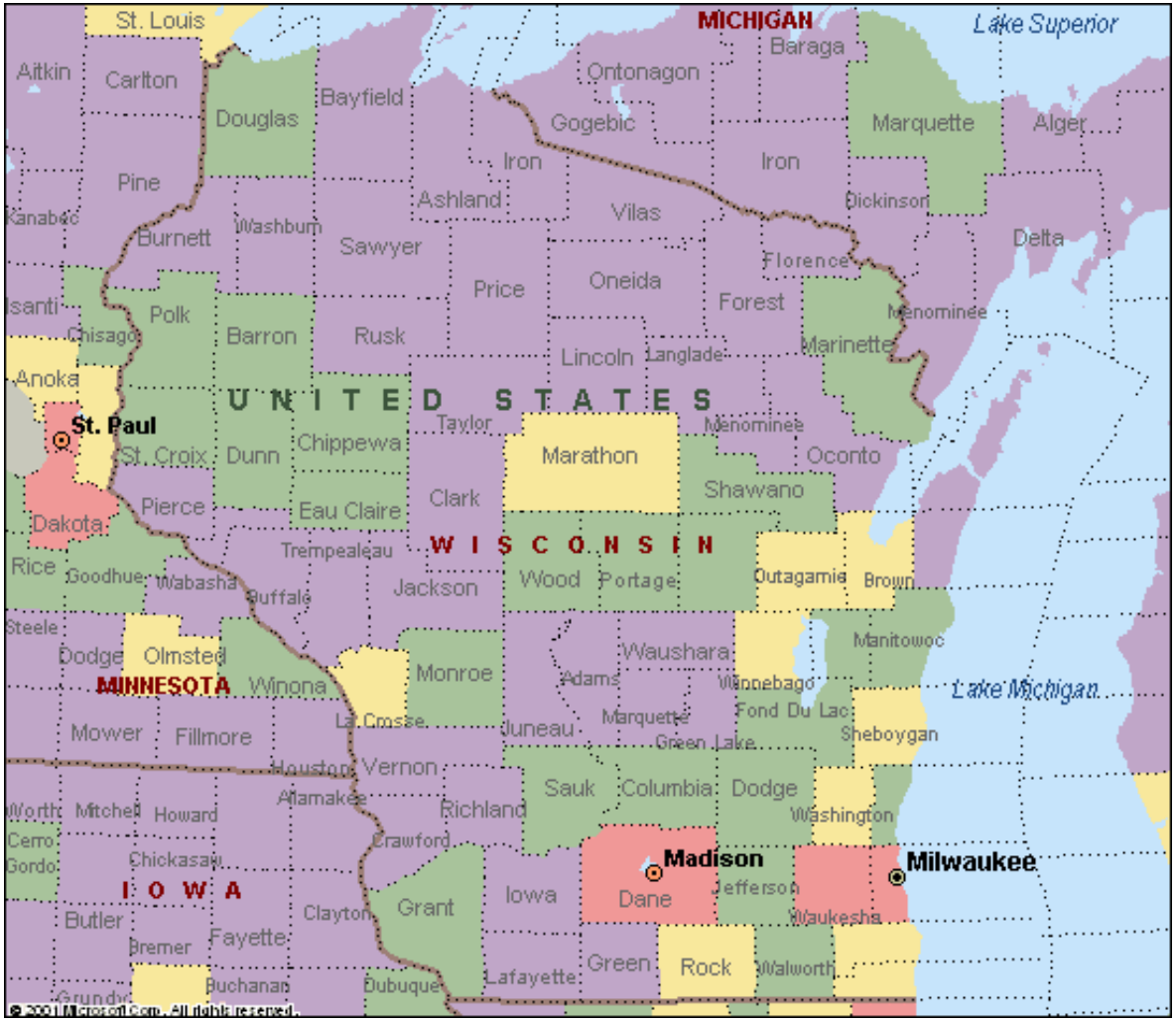
- Agency-Specific Configuration for Rules, Security, Reporting (Vertical Integration of **tactical** functions)
- Enterprise-wide Configuration for Financial, EMCI, other "support" components (Horizontal Integration of **strategic** functions)
- Single "look-and-feel" across agencies for uniform mgmt of business-level processes
- "Rollout by configuration," not discrete development
- Standardized architecture for administrative support

County Perspectives

- Counties vary significantly in size and staffing capacity
  - (See next slide)
- Counties have wider portfolio than a single State/Federal Agency
  - Agency-specific applications ignore the broader needs of operating a county enterprise business
- Counties can be nimble
  - Good for flexibility, speed of rollout
  - Bad for standardization across Counties
- Limited Funding
  - Limited funding for County integration projects
  - Expectation to deliver real, measurable value, improve services and manage cost

County Population (2005 Projection)

Wisconsin Digital Government Summit



EAI's Legacy: Fossils or Living Processes?

"The enterprise application portfolio is the organizational memory, the fossil, of the decisions and actions that business and IT have taken over time."

"To pass on more than fossils to the next generation of IT professionals, we should take a few lessons from history.

Specifically, we should focus on process (the essence of complex adaptive systems) first and data second. We should attack problems holistically and avoid fragmented point solutions. We should test proposed solutions -- not just analytical models -- in the real world."

John G. Schmidt -- "eAI Journal – The Software Ecologist, Complex Adaptive Systems"

Dialogue / Questions